bladder. In the majority of cases the catheter is used either intermittently or constantly, and if the kidney function and general condition improve sufficiently, we proceed at once with the prostatectomy. In the remaining group of cases, which includes all those in whom the preliminary catheter treatment has failed, we advocate the two-stage operation.

There are certain technical difficulties associated with the removal of the prostate, which are dependent upon preliminary drainage of the bladder—difficulties which cannot easily be overcome. The size of the incision is limited to the distance between the drainage opening and the pubic bone, since it is unsafe to enlarge this incision upward on account of the danger of opening the peritoneal cavity, the peritoneum having become attached to the bladder wall in the line of the original incision. This gives insufficient exposure of the prostatic bed, and in the event of hemorrhage it is often difficult to apply gauze packing. This is the one certain way to control hemorrhage after prostatectomy. Distensible bags and similar playthings are effective only in cases in which there is no bleeding.

Very large prostates are usually easily enucleable, but it is frequently quite difficult to deliver them through the small suprapubic wound; in fact, it is frequently necessary to section the gland and remove it piecemeal.

Preliminary drainage of the bladder serves, however, to relieve the congestion of the prostate gland, so that at the time of the second stage of the operation it is much smaller than the digital examination at the time of the first operation would lead us to believe. This shrinkage of the organ, while serving to add to the difficulties of enucleation, minimizes postoperative bleeding, so that packing to control hemorrhage is less often necessary with the two-stage operation. The success of prostatectomy, let me repeat, is chiefly dependent upon the preliminary treatment; of secondary importance are the technical details with which the enucleation of the prostate is accomplished.

SURGICAL RENAL TUBERCULOSIS: THE PROGNOSIS.[1]

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SEVERAL factors affecting the prognosis in cases of surgical renal tuberculosis have not as yet been definitely determined. Probably the most important of these are: Age, sex, coincident tuberculosis in other tissues, duration of symptoms, degree of involvement of the bladder and kidney and bilateral renal disease.

According to the surgical records of the Mayo Clinic 532 persons were operated on for renal tuberculosis from January 1, 1894, to January 1, 1918. During this period about 85,000 patients were operated on; thus the incidence of surgical renal tuberculosis may be estimated as 0.6 per cent. A previous review[2] has been made of the postoperative records of a portion of these cases, but the present data have been derived from more complete records and a larger number of cases.

The total number of patients (532) was employed in the estimation of many of the general statistics. Among this number were 16 patients who were known to have bilateral renal tuberculosis and were therefore not considered in the survey of postoperative results. Statistics bearing on postoperative results were based on the postoperative records of patients heard from either by correspondence or by personal examination. This number included 435 patients (84.3 per cent.) of those operated on. It will be noted that only the postoperative records of patients operated on prior to January 1, 1918 were studied. In considering the influence of the different complications it was found that more detailed data were available in 346 cases in which operations were performed from January 1, 1912, to January 1, 1918 inclusive.

TABLE I.—AGE.

Patients operated on 532

2 patients	0 to 10 years	. . . .	0.4	per cent.
37 "	11 to 20 "	. . . .	6.9	"
197 "	21 to 30 "	. . . .	37.0	"
168 "	31 to 40 "	. . . .	32.0	"
89 "	41 to 50 "	. . . .	16.7	"
36 "	51 to 60 "	. . . .	6.7	"
3 "	61 to 70 "	. . . .	0.6	"

Patients with post-operative data, 435.

Reported dead.

32 patients	11 to 20 years	. . . .	9 (28.1 per cent.)
161 "	21 to 30 "	. . . .	41 (26.2 "
137 "	31 to 40 "	. . . .	26 (18.9 "
75 "	41 to 50 "	. . . .	20 (26.6 "
27 "	51 to 60 "	. . . .	7 (25.9 "
3 "	61 to 70 "	. . . .	1 (33.3 "

The greatest incidence of surgical renal tuberculosis (69 per cent. of the total) occurred between the ages of twenty and forty. The largest number of cases (37 per cent.) is in the third decade. The condition is rarely found in the first and seventh decade. When tuberculous infection of the kidney does occur in children, it is usually in conjunction with tuberculosis disseminated in other tissues so that operation is inadvisable. Nephrectomy in children should not be done with the first onset of symptoms; it is advisable only

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[2] Braasch, W. F.: Clinical observations from 203 patients operated on for renal tuberculosis, Jour. Am. Med. Assn., February, 1912, lviii, 397–401.

when it is evident that the active tuberculous infection is localized to the kidney.

The influence of age on the ultimate prognosis is of comparatively little significance and the general mortality average remains fairly constant in the various decades. The late mortality during the third decade is somewhat lower than that during the other decades, but the difference is not great enough to warrant any definite prognostic distinction. In the first and last decades too few cases are involved to give the mortality percentage any accurate value.

TABLE II.—SEX.

Patients	532
Males	338 (63.5 per cent.)
Females	194 (36.5 "
Patients with postoperative data	435
Deaths	105
Males	75 (27.5 "
Females	30 (18.4 "

The greater number of male patients is in keeping with the preponderance of male patients in cases of other chronic infections of the kidney. The relative mortality is somewhat higher in the male. The relative duration of preoperative symptoms is practically the same in both sexes.

TABLE III.—COINCIDENT LESIONS.

Patients with renal tuberculosis operated on from 1912–1918	346
" with coincident lesions	244 (71.0 per cent.)
" with complete postoperative data	201
" who died	33 (16.4 "
" with one lesion	89
" with one lesion who died	14 (15.7 "
" with two lesions	56
" with two lesions who died	9 (17.8 "
" with three lesions	39
" with three lesions who died	5 (12.8 "
" with more than three lesions	17
" with more than three lesions who died	5 (29.4 "

Evidence of tuberculosis in other parts of the body, either healed or active, was found in 244 of the 346 patients (71 per cent.) operated on since 1912. In the examination of a patient with suspected renal tuberculosis a thorough search for such complications is necessary. In fact, it is questionable whether renal tuberculosis ever occurs without coincident tuberculosis in some other tissue, and which may not be apparent on casual examination. That such complications exert but little influence on the ultimate prognosis is evidenced by the fact that the mortality percentage in our cases was even lower when coincident tuberculosis was noted than that of the general average. The occurrence of coincident tuberculosis, particularly when healed or dormant, does not necessarily render the prog-

nosis less favorable; in fact, it may be regarded as an evidence of good resistance power on the part of the patient. In reviewing the postoperative results of the patients with complications, it is of interest to note that when multiple lesions occurred the percentage of recovery was relatively as great as when only one lesion was noted. The only exception occurred when multiple, active complications existed as a part of a generalized tuberculosis. The individual influence of the various coincident tuberculous lesions will be considered separately.

TABLE IV.—COINCIDENT PULMONARY TUBERCULOSIS.

Patients operated on for renal tuberculosis 1912–1918 . .	346	
" having complete postoperative information . . .	298	
" who died	44	(14.7 per cent.)
" having complete x-ray and clinical examination of chest	300	
" having definite evidence of pulmonary involvement.	81	(27.0 "
" having definite active tuberculosis	16	(5.3 "
" having definite active tuberculosis and complete postoperative information	13	·
" who died (none in hospital)	6	(46.3 "
" having doubtful active tuberculosis	17	
" having doubtful active tuberculosis and complete postoperative information	16	
" who died	3	(18.7 "
" having definite healed tuberculosis	26	
" having definite healed tuberculosis and complete postoperative information	21	
" who died	2	(9.5 "
" having indefinite clinical or indefinite evidence of previous pulmonary involvement	22	
" having complete postoperative information . . .	19	
" who died	1	(5.2 "

Pulmonary tuberculosis is one of the most common complications occurring with renal tuberculosis. Fortunately, it is usually found in a chronic or healed form. Renal tuberculosis is not a common complication of active pulmonary tuberculosis. It occurred as a coincident infection in less than 5 per cent. of our patients. As a part of a general or a miliary tuberculosis the coincident infection probably occurs more frequently. Pulmonary tuberculosis as a secondary complication of renal tuberculosis is of relatively infrequent occurrence, although it is a factor in the late mortality after nephrectomy.

Complete roentgen-ray and clinical examinations were made of the chest in 300 patients. Evidence of pulmonary tuberculosis was found in 84 (28 per cent.). The cases were divided into four groups: (1) Definite active tuberculosis; (2) doubtful active tuberculosis; (3) definite healed tuberculosis, and (4) doubtful clinical or roentgen-ray evidence of previous involvement. A number of patients in whom the physical and roentgen-ray data were indefinite were not included.

In Group 1 were 16 patients (4.6 per cent.) of the total number operated on. Fourteen were males and 2 were females. The mortality of this group, as might be expected, was very high; 6 (37.5 per cent.) of the patients died. However, since almost two-thirds of the patients recovered it is evident that active pulmonary tuberculosis does not necessarily exclude operation in cases of renal tuberlosis, but, on the contrary, offers a fair chance for recovery. In the majority of these cases the active pulmonary lesion was confined to comparatively limited areas, diffuse miliary involvement being regarded as excluding operation. In several cases, although the lesions were quite extensive and even bilateral, the general condition of the patients warranted operation. In several cases of well-advanced pulmonary tuberculosis the advisability of operation was doubtful, but it was rightfully argued that an operation offered the only chance of recovery. The most important factor in determining the advisability of operation was the patient's general condition. None of the patients died in the hospital or immediately following operation, showing that the anesthetic (ether in every case), even in the presence of active pulmonary tuberculosis, had no immediate harmful effect.

Group 2 probably includes a small number of patients with limited active lesions. The mortality was approximately average. In Groups 3 and 4 the mortality was unusually low. From this it may be argued that patients with healed pulmonary tuberculosis have developed high resisting powers against the tuberculous infection, and that complicating renal tuberculosis is an evidence that the resistance of patients is only temporarily lowered at the time of the renal infection.

<div align="center">TABLE V.—GENITALIA.</div>

Male patients operated on (1912–1918)	234
Lesions in genitalia	171 (73.0 per cent.)
Complete postoperative data	141
Reported dead	26 (18.4 "
Epididymectomy prior to operation	26
Epididymectomy after operation	24
Patients who died following epididymectomy after operation	3 (12.5 "

Coincident tuberculosis in the genitalia rarely occurs in the female; it was noted as definite in 171 (73 per cent.) of the group of 234 male patients. Twenty-six of these patients (18.4 per cent.) died, 13 during the first year. The late mortality is therefore not greatly influenced by this complication. The high percentage of recoveries among the patients in this group who had clinical evidence of tuberculosis in the prostate and seminal vesicles should contra-indicate surgical treatment of these organs. It is evident that spontaneous healing must occur in the majority of instances. On subsequent examinations the prostate and vesicles are usually diminished in size, and either hard and fibrous or apparently practically normal.

Acute suppuration in the prostate and seminal vesicles is unusual. Surgical treatment of the tuberculous prostate is indicated only in certain cases of protracted vesical irritation or in the presence of suppuration.

Tuberculosis in the epididymis and testicle should be treated surgically because of the frequency of suppuration and because the process does not usually become dormant and disappear. Furthermore, a tuberculous epididymis must always be regarded as a possible focus of general infection. Epididymectomy was done in 50 patients in the series, 26 prior to nephrectomy and 24 following nephrectomy. Three (12.5 per cent.) of the last group are reported dead.

TABLE VI.—BONES AND JOINTS.

Patients with lesions	21 (6.0 per cent.)
Patients with complete postoperative data . . .	19
Patients with lesions described as active	10 (57.8 "
Patients reported dead	1 (5.2 "
Patients with spondylitis	17 (5.7 "
Patients with active spondylitis	3
Patients reported dead (1 active spondylitis) . . .	2 (11.7 "

Tuberculosis, either healed or active, involving the bones and joints, is not unusual with renal tuberculosis. A review of our records shows 21 (6 per cent.) such cases. Of this number 10 were described as active. Four (13.3 per cent.) of the patients are reported dead. Coincident lesions in the bones, even though active, have little or no bearing on the prognosis, provided it is not a part of general acute tuberculosis.

To the group of complications involving the bones should be added the cases of spondylitis. Fourteen patients were suffering with chronic and three with active spondylitis. Two of the former and one of the latter are reported dead, evidence that chronic spondylitis does not greatly affect the ultimate result. Active spondylitis, particularly in the presence of other tuberculous lesions, will necessarily make the prognosis much more serious, but it does not contraindicate operation. One of the patients with an active process operated on six years ago is living, in a fair degree of health. In a number of such patients observed the condition was regarded as inoperable either because of their general health or the presence of other active complications.

ADENITIS.

In but 19 (6.4 per cent.) patients was there any well-marked evidence of tuberculous adenitis. In the majority of these only a few glands were involved, and in none sufficiently to require surgical intervention. Two of the nineteen patients (10 per cent.) are reported dead, indicating that this complication has no bearing on

the prognosis other than to show the high resistance on the part of the patient.

TABLE VII.—HEMOGLOBIN.

Patients having less than 80 per cent.	73
Patients reported dead	7 (9 per cent.)
Average duration of bladder symptoms (2 cases without) . .	2 yrs. 9 mos.
Patients with 50 per cent. or below (one died)	8

Anemia secondary to renal tuberculosis is frequently noted. Its incidence in our series was 25 per cent. As a rule the degree of anemia is not marked. The reduction in hemoglobin is seldom caused by the loss of blood from hematuria. It is not in proportion to the duration of symptoms of the bladder, since a number of patients with low hemoglobin had symptoms of only a few months' duration. The average duration was two years and seven months, which is about the average of all cases. The greatest reduction of hemoglobin is noted with extensive renal suppuration when absorption of toxins was evidently the cause. The degree of hemoglobin gives no index to prognosis; 8 patients had 50 per cent. hemoglobin, or below, of whom 1 died. Seven patients in the series (9 per cent.) are reported dead.

TABLE VIII.—BLADDER INVOLVEMENT.

	Patients.	Dead.	Per cent.	
Degree 1	55	8	14.5	}11
Degree 2	92	9	9.7	
Degree 3	71	16	22.5	}20
Degree 4	43	7	16.2	

The pathological condition in the bladder as noted on cystoscopic examination in this series is estimated on a scale of 1 to 4; 1 slight involvement; 2 moderate; 3 marked, and 4 extreme. It was found that the patients were about equally divided between moderate (1 and 2) and marked (3 and 4), the largest single group being 3. The average duration of preoperative symptoms when the degree of inflammation was scaled 3 and 4 was two and one-half years, and when it was scaled 1 and 2 it was only one and one-half years. When the preoperative degree of bladder inflammation was slight or moderate (1 and 2) it was found that immediate postoperative improvement in bladder symptoms occurred in 20 per cent., whereas with bladder inflammation graded 3 and 4 immediate improvement was noted in only 10 per cent. The late mortality in cases of moderate bladder involvement (1 and 2) was practically 11 per cent., whereas with advanced involvement (3 and 4) it was 20 per cent., or twice as great. Although the renal disease usually has existed longer in cases of marked bladder involvement, the difference in involvement is evidently more dependent on the virulence of the infection than on the duration of symptoms.

TABLE IX.—DEGREE OF PATHOLOGY.

Patients with complete postoperative data (1912–1918) . .   298
Patients dead . . . .   44 (14.7 per cent.)
Patients with limited lesion   37
Patients dead . . . .   2 (4.5   "
Patients with advanced lesion   159
Patients dead . . . .   25 (15.7   "
Patients with large pyonephrosis   58
Patients dead . . . .   12 (20.6   "
Patients with occluded tuberculosis   44
Patients dead . . . .   5 (11.3   "

The conditions of the kidneys removed were divided into four groups: (1) Slight lesions; (2) advanced lesions; (3) complete destruction, described as advanced pyonephrosis; and (4) occluded (caseated) tuberculosis. The lesions in the first group were slight, consisting of limited single areas or multiple early lesions. The mortality in this group (4.5 per cent.) was the lowest and seems to refute the necessity of the patient's development of immunity before the kidney is removed. In by far the largest number of patients the pathological condition of the kidneys was described as advanced (Group 2). Multiple areas involving from one to two-thirds of the kidney substances were usually found. In Group 3 the process has generally existed for so long a time that extensive suppuration has occurred. The mortality is greatest and is probably explained by absorption of toxins from the extensive abscesses, with consequent damage to the other organs. Nevertheless, the most gratifying results are frequently obtained among patients in this group who before their operation are often in extremely poor general condition and afterward become quite normal. Group 4 is in reality a group by itself. It is composed of patients in whom Nature has occluded the ureter, performing a so-called autonephrectomy, and the tuberculous process is supposed to have run its course. In only a few such cases was there any evidence of active tuberculosis in the kidneys; in the majority, the original kidney tissue had undergone caseation. The low mortality is evidenced by the patient's high resisting powers.

TABLE X.—DURATION OF PREOPERATIVE SYMPTOMS.

	Cases.	No change or slight improved.	Markedly improved or practically well.	Dead.
1 to 3 months	30	4 (13.3 per cent.)	18 (60.0 per cent.)	8 (26.6 per cent.)
4 to 12 months	162	33 (20.3 "	87 (53.7 "	42 (25.9 "
1 to 5 years .	155	40 (25.8 "	71 (45.8 "	44 (28.3 "
5 years .	57	23 (40.3 "	27 (47.3 "	7 (12.2 "
Indefinite .	31	4 (12.9 "	23 (74.1 "	4 (12.9 "
Total . .	435	104 (23.9 "	226 (51.7 "	105 (24.1 "

The influence of the duration of preoperative symptoms on the prognosis might be considered from three phases: (1) Its relation to the severity of the bladder infection; (2) the time elapsing before postoperative improvement, and (3) the postoperative mortality.

Although the severity of the bladder infection is largely dependent on the length of the preoperative symptoms there are other influential factors. It is not uncommon to observe marked inflammation and ulceration with symptoms of only a few weeks' duration. On the other hand a fairly normal bladder is occasionally found when the disease has evidently existed many months. Further, with occluded renal tuberculosis when the initial symptoms had occurred and ceased several years before, the cause of the bladder infection having been removed by autonephrectomy, the bladder usually became fairly normal.

In the majority of cases the duration of vesical symptoms persisting after operation diminished in direct proportion to the length of preoperative symptoms. Of the patients with preoperative symptoms of less than three or four months' duration improvement was noted immediately in 48 per cent. When the symptoms existed a year or more prior to operation immediate improvement was noted in only 15 per cent.

A review of the mortality records shows that there is surprisingly little difference in the mortality with regard to the length of preoperative symptoms of less than five years. It has been claimed that the mortality of patients with short duration of symptoms is considerably higher than that of patients of long duration, and that a relative degree of immunity is established among the latter. This, however, was not borne out in our cases, since the group of patients with symptoms of less than three months had practically the same mortality as the group in which the symptoms were of much longer duration. It is of interest that the mortality in the group of patients having symptoms more than five years is considerably less than the average. This is explained by the fact that many of these patients had either an occluded renal tuberculosis or a high degree of immunity. This group also included five patients who had no evidence of disease other than albuminuria and slight pyuria, and in whom the discovery of renal tuberculosis was largely accidental.

TABLE XI.—BILATERAL RENAL TUBERCULOSIS.

Patients with definite bilateral involvement 16
Patients reported dead (none alive longer than one and one-half years) . 13
Patients living (less than two years after operation) 3

It has been claimed that in cases of bilateral renal tuberculosis if the more diseased kidney is removed the patient will often improve, and in certain instances recover. It has also been claimed that infection in the remaining kidney may be reduced or overcome by compensatory hypertrophy; this has not, however, been substantiated by the end-results in our series of bilateral cases. Thirteen of the 16 patients with proved bilateral renal tuberculosis are reported dead; 3 are living. None of the 13 patients lived more than

one and one-half years after operation, and all but 3 died in less than
six months. The 3 living were operated on two years before their
last report. One of these became steadily worse and recently had
complicating perineal fistulas. The general health of the other two
has temporarily improved. Both patients had a large, active tuber-
culous pyonephrosis on one side, which was removed, and a fair
degree of function in the other kidney. Such patients improve
because the toxemia of acute infection is removed, and not because
of improvement in the other kidney. When an occluded caseated
kidney was removed, little or no benefit followed. Unless one kidney
is largely destroyed and the other is in fair condition, operation
should not be considered; and then only when infection, pain, or
possibly hemorrhage renders it imperative. Many cases of bilateral
renal tuberculosis in which cure by operation was reported in the
literature were probably not bilateral. Doubtless pus or tuber-
culosis bacilli picked up by the ureteral catheter from an infected
lower ureter while the kidney itself was normal could best explain
such results.

TABLE XII.—MORTALITY.

Operations for unilateral renal tuberculosis . . .	516
Operative mortality	7 (1.3 per cent.)
Patients with complete postoperative data . . .	435
Deaths	105 (24.1 "
One year or less after operation	58 (55.2 "
Two years after operation	8
Three years after operation	6
Four years after operation	2
Five years after operation	7
Six years after operation	5
Seven years after operation	3
Eight years after operation	1
Nine years after operation	1
Ten years and over after operation	1
Date of deaths not given	13

The operative mortality (1.3 per cent.) is a comparatively negli-
gible factor. The total mortality (excluding bilateral renal tuber-
culosis) is 24 per cent., which includes every death from any cause
following operation, some occurring as long as ten or more years
afterward.

Fifty-eight patients (55 per cent.) died within one year after
operation. The relatively high mortality during the first year after
operation has been previously noted by several observers. It would
seem logical to regard the early death as an evidence of the virulence
of the infection rather than as a result of the operation. It may
be inferred that the probability of death from tuberculosis decreases
inversely with the length of time after operation. Owing to the
inability to get accurate data as to the cause of postoperative death,
no attempt was made to investigate this factor.

Many patients died from diseases other than tuberculosis and
from accidents, so that the late mortality from tuberculosis is really

much less than our figures indicate. Furthermore, a considerable proportion of the total number of deaths reported occurred more than five years after operation. It would be conservative and more accurate, therefore, to regard the actual late mortality as not more than 20 per cent.

One hundred and four (23 per cent.) of the living patients stated that they had not entirely recovered from their bladder symptoms. From many of these answers to inquiries were received in less than two years after operation, and it is safe to assume that at least 5 per cent. would eventually report recovery from their symptoms. Moreover, 64 patients reported a gain in weight and general condition, so that except for the bladder symptoms they were in a fairly good state of health.

It may be assumed, therefore, that approximately 80 per cent. of the patients will recover following operation for renal tuberculosis and that a complete cure, including cessation of urinary symptoms, may be expected in fully 60 per cent.

CONCLUSIONS.

1. Renal tuberculosis occurs most frequently between the ages of twenty and forty years (70 per cent.).

2. It occurs in the male almost twice as often as in the female.

3. The postoperative mortality in the male patient is somewhat higher than in the female.

4. The condition is usually not surgical in children; it occurs more often as a part of a general tuberculosis.

5. Evidence of tuberculosis in other tissues of the body may be found in fully 71 per cent. of the patients, if not in all.

6. The postoperative mortality among patients with coincident lesions is not higher than that of the general average.

7. Multiple lesions, unless they are a part of an acute general infection, do not necessarily render the prognosis more unfavorable.

8. Evidence of healed pulmonary tuberculosis is present in fully one-third of the patients.

9. The percentage of recovery among patients with healed pulmonary tuberculosis is above the average and may be considered indicative of increased powers of resistance.

10. Coincident active pulmonary tuberculosis was found in approximately 5 per cent. of the patients, of whom more than 60 per cent. recovered following nephrectomy.

11. Involvement of genitalia is present in at least 73 per cent. of male patients and does not seem to affect the ultimate recovery.

12. Frequency of spontaneous healing of lesions in the prostate and seminal vesicles contra-indicates their removal by subsequent operation.

13. Evidence of tuberculosis involving the bones and joints was noted in 6 per cent. of the cases; one-half of the lesions were active. The late mortality was 5 per cent., from which it may be inferred that the presence of such complications may be an index of increased resistance.

14. Spondylitis, usually healed, was present in 5.7 per cent., with a mortality of 12 per cent.

15. Chronic spondylitis does not influence the prognosis. Active spondylitis, although it does not contra-indicate nephrectomy, will not offer a favorable prognosis.

16. Tuberculous adenitis was present in 19 patients (6.4 per cent.) and the low mortality (10 per cent.) is suggestive of a heightened resistance.

17. Reduction in hemoglobin does not necessarily affect the prognosis.

18. The mortality among patients with marked bladder involvement is twice as great as with slight involvement. The degree of involvement is dependent not so much on the duration of symptoms as on the virulence of the infection.

19. The mortality percentage is markedly influenced by the degree of pathological involvement of the kidney, increasing in proportion to the extent of the lesion. Early lesions have the lowest mortality and pyonephrosis the highest.

20. Occluded renal tuberculosis is indicative of relative immunity and a low mortality.

21. The duration of preoperative symptoms does not materially affect the late mortality.

22. Recovery from bladder symptoms is more apt to occur, and earlier, when the preoperative symptoms are short than when they are long.

23. Recovery or permanent improvement of the remaining kidney will not follow after one kidney has been removed in cases of bilateral renal tuberculosis.

24. Operation in cases of bilateral renal tuberculosis is advisable only when there are acute unilateral complications, and then with no hope of eventual recovery.

25. Late mortality is much the highest during the first year; it decreases with the length of time elapsing after operation.

26. The operative mortality is a negligible factor; the late mortality (five years or less after operation) is approximately 20 per cent.; failure to effect complete cure is approximately 20 per cent.; this leaves a prognosis of recovery in 80 per cent. and of a complete cure to be expected in fully 60 per cent. of patients.